

In the Drawings

Please amend the drawings by replacing FIG.'s 1-3 with FIG.'s 1-3 of the Replacement Sheet.

REMARKS

The specification (the Statement of Invention and the abstract) is being amended.

FIG. 1 and FIG. 2 of the drawings are being corrected.

Claims 3, 6, 8 and 10 are pending.

Claim 2 is cancelled.

Claims 1, 4, 5 7, 9, 11 and 12 are being amended.

No new matter is being added.

In response to the objections to Figures 1 and 2 of the drawings in paragraph 3 and paragraph 4 of the OA, a replacement sheet of the drawings is attached, correcting the drawings.

In response to the objections to the Specification in paragraph 5 and paragraph 6 of the OA, namely the abstract, the abstract has been corrected and is being submitted on a separate sheet. Furthermore, the Statement of Invention has been corrected to comply with the Claim numbering.

In response to the objections to the Claims in paragraph 8 of the OA, Claim 7 and Claim 9 have been corrected accordingly.

In response to the rejections to the Claims in paragraph 10 and paragraph 11 of the OA, Claim 1 and Claim 11 have been corrected accordingly.

In response to the rejections to the Claims in paragraphs 12 to 14 of the OA, Claim 2 has been cancelled without prejudice.

In response to the rejections to the Claims in paragraphs 15 to 18 of the OA, it is respectfully submitted that the method disclosed by Baek-Jong compares the '**4' branch metrics** (emphasis added) to determine the smallest among them. Baek-Jong then discloses subtracting the lowest value from the others. In employing this method one of the branch metrics becomes zero. However, it does not allow any determination in advance of which branch metric becomes zero. Thus, the input to one of the 4 adders happens to be zero in one step, but the adder cannot be omitted, because in the next step a different branch metric may become zero. As a consequence, a simplified Add-compare select butterfly unit cannot be used.

In contrast, the method if claim 4 deterministically produces a zero branch metric at always the same butterfly input(s). As a consequence, some of the Classical Add-compare select butterfly units used in Baek-Jong may be replaced using the inventive concept of the claimed invention by employing lower complexity units with two adders omitted. These lower complexity units are selected for use only with the branch metrics that are known always to be ‘zero’.

In response to the rejections to the Claims in paragraphs 19 to 21 of the OA, the following observations are respectfully submitted.

It is acknowledged that a Viterbi decoder employing solely classical ACS units is the closest citation to the present invention. Notably, such Viterbi decoders employ numerous classical ACS units, each of which comprises four adder units that are always used, irrespective of the input values.

Thus, the independent Claims of the present invention are distinguished over classical ACS units in that the Viterbi decoder comprises a number of classical Add-Compare-Select units (having Type III and/or Type IV butterfly units) as well as a number of further Add-Compare-Select unit(s) having a lower complexity butterfly unit. In this regard, as clarified on page 5, lines 16 to 22, page 6 lines 25 to 29 and page 14 and page 15 of the specification as originally filed, an embodiment of the present invention proposes replacing a number of classical ACS units with a number of less complex ACS units. Notably, the lower complexity butterfly unit comprises only two adders, where the lower complexity butterfly unit is only used when a branch metric is zero.

In contrast to known teaching, embodiments of the present invention utilize the prior knowledge that a branch metric is zero to enable the Viterbi decoder of the present invention to select a less complex ACS unit instead of a classical ACS unit, particularly when both units exist in a parallel structure. Thus, it is respectfully submitted that any comparison with a classical ACS unit where one branch metric happens to occasionally be a zero is flawed, as the standard four adder arrangement is used and normal calculations are still performed.

None of the citations, either in isolation or in combination disclose or suggest the aforementioned novel and inventive features of Claims 1, 4 and 11. Thus, it is respectfully submitted that each of Claims 1, 4 and 11, and any Claim dependent therefrom, is both novel and non-obvious over the known art.

With respect to the Oath/Declaration objection in paragraph 2 of the OA, Applicants submit that a post office address was provided in the original oath/declaration as filed, located two paragraphs above the inventors' signatures. Therefore, Applicants submit that 37 CFR 1.33(a) was complied with. However, please note that below, next to the signature of the undersigned attorney, a correspondence address for Freescale Semiconductor, Inc. is provided through the identification of a USPTO customer number (customer number 23125). Thus, a complete post office address is being provided.

The case is believed to be in condition for allowance and notice to such effect is respectfully requested. If there is any issue that may be resolved, the Examiner is respectfully requested to telephone the undersigned.

If Applicant has overlooked any additional fees, or if any overpayment has been made, the Commissioner is hereby authorized to credit or debit Deposit Account 503079, Freescale Semiconductor, Inc.

Respectfully submitted,

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